

Wastewater getting new life across county

BY [MIKE LEE](#)

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Drought fears are fading for San Diego County residents, but lessons of the past three dry years have pushed utility leaders across region toward an unprecedented array of projects for turning sewage into usable supplies for irrigation, industry and even drinking water.

The concept goes back decades and it's been embraced in places without coming close to reaching its potential. The untapped possibilities are prompting campaigns to treat wastewater as a resource rather than a liability and likely will mean expansive — and expensive — forays into water recycling.

Think of it as the dawn of a new era in which every drop of sewage is scrutinized for possible reuse.



HOWARD LIPIN / P>

Reverse osmosis tubes are a critical part of San Diego city's attempt to purify wastewater so that it meets drinking water standards.

While drought has been a main motivator, momentum for recycling also comes from a growing sense that dumping huge volumes of partly treated sewage comes at an enormous cost, along with a growing public acceptance of purification technology.

A recent countywide poll showed 67 percent of respondents supported the use of ultraclean recycled water in their taps, up from 63 percent in 2009 and 28 percent in the pre-drought days of 2005. In the late 1990s, a water recycling plan in San Diego city became a political flash point when it was dubbed toilet-to-tap. The fracas set back related efforts for years.

“We have seen sort of a sea change in this area,” said Gabriel Solmer, interim director of San Diego Coastkeeper, a nonprofit group that advocates for water recycling. “We have realized that there are finite amounts of water, and we need to do a better job in using that resource all the way through the life cycle.”

Now that public support for the concept of water recycling is solid, the main hurdle is money. Ratepayers are weary of a seemingly endless string of increases, and recycled water still is far more costly than traditional source such as the Colorado River.

However, it's not subject to the same ecological demands as river water and using it can help agencies avoid costs of pumping it to sea. Besides, the cheap water sources are tapped out and capacity for growth is likely to come from sources that once were deemed too expensive.

More than half of the region's major water districts are planning or exploring expansions of recycled water use. Projects on tap include a \$11.8 million demonstration project in San Diego city to turn wastewater into potable water that goes live in June and an emerging alliance of several North County agencies that are seeking federal money to help pay for their \$175 million strategy.

Eight project proponents already have pumped about \$150 million into their water recycling systems and they are asking Congress for \$50 million more, or roughly a third of the projected costs for expansion. The price includes new “purple pipe” extensions for carrying recycled water, expansion and construction of processing plants and new reservoir space.

All told, the North County projects could create up to 15,000 acre-feet of new supply per year, enough to serve at least 30,000 typical families. That would roughly double the amount of water recycling in the districts by 2020 and help agencies meet state conservation goals.

“I would hope it sets a new model for the San Diego region,” said Kim Thorner, general manager of the Olivenhain Municipal Water District and a leader of the emerging North County campaign. “There are huge opportunities.”

The North County alliance jelled over the past year as agency leaders realized they had complementary goals but needed each other's help to get wastewater from where it was generated to where it's needed.

“What this ultimately turned into was opportunities across borders,” Thorner said.

Mitch Dion, general manager at the Rincon del Diablo Municipal Water District in Escondido, said projected rises in imported water costs over the next five years mean prices for recycled water will be increasingly competitive with traditional sources.

He's hoping to take super-treated wastewater from Escondido residents and pump it into an aquifer near Lake Hodges for storage. Then it could be withdrawn and treated to drinking water standards for home delivery.

If all goes well, Rincon eventually could meet most of its potable water needs from repurified wastewater. A similar process — at a much larger scale — has been used in Orange County for decades.

In San Diego, city utility leaders are considering a major retooling of their wastewater system to minimize the amount of treated sewage discharged to the ocean and boost the amount that's reused.

Historically, San Diego has done that by selling partly cleaned wastewater for irrigation and industrial use following a failed attempt in the late 1990s to turn it into drinking water.

That could change thanks to an advanced water purification treatment line that's nearly ready to start processing 1 million gallons a day at the North City Water Reclamation Plant off Miramar Road. On Tuesday, drills hummed and ladders clanged as crews connected wires and pipes in the final phase of construction.

In early June, the city plans to start diverting wastewater into the new reverse-osmosis and ultraviolet treatment chambers in hopes of proving it can be cleaned to potable standards. Shortly after that, city officials plan to offer public tours.

The new advanced water purification line will be tested over the next year under scrutiny by state health officials without putting any water into residential pipes.

If the technology works as anticipated, it would give the City Council another option for investing in the next generation of water recycling — assuming leaders can find a way to pay for a plant with roughly 15 times as much capacity and a long pipe to put the water in San Vicente Reservoir. There, it would mix with other water and be treated again before making its way to city taps.

The costs for construction and operation of such facilities will be generated once figures are firmed up for the demonstration project.

Water sources

Water varies vastly in price, depending on such factors as how far it has to travel, how much energy it takes to pump or clean. Even relatively expensive sources may be deemed necessary if they are drought-proof. Prices are given per acre-foot, which is enough to serve two typical Southern California families for a year.

\$742 — Water from the Metropolitan Water District (2011 rate), after treatment

\$500-\$2,250 – Non-potable recycled water

\$750-\$2,100 – Desalinated groundwater

\$920 – Colorado River water from the Imperial Irrigation District, after treatment

\$1,600-\$2,350 – Desalinated seawater from proposed projects

\$2,200-\$2,400 – Potable recycled water from proposed projects

Source: San Diego County Water Authority, 2010

Water alliance

Eight agencies in North County are lobbying Congress for \$50 million to increase water recycling in the area and share it across district lines. They are:

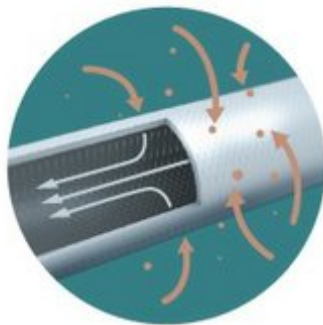
- Carlsbad
- Leucadia Wastewater District
- Olivenhain Municipal Water District
- Oceanside
- Rincon del Diablo Municipal Water District
- San Elijo Joint Powers Authority
- Vallecitos Water District
- Vista Irrigation District

Advanced water purification

Advanced water purification is a three-step process that cleans water to a level similar to that of distilled water.

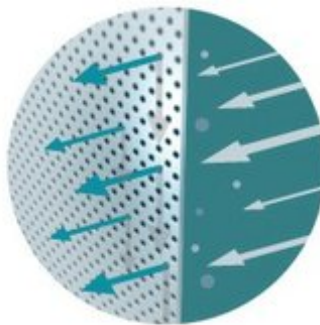
Microfiltration

Water is sucked through thousands of tiny straws — each no wider than three hundredths the thickness of a human hair — that filter out bacteria, protozoa and suspended particles.



Reverse osmosis

Water, under great pressure, is then forced through a semipermeable membrane with holes small enough to let only water molecules pass through.



Ultraviolet light

Intense ultraviolet light breaks up remaining organic molecules. Hydrogen peroxide then oxidizes the remnants of broken molecules, disinfecting the water.

